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SUMMARY OF WATER PROBLEMS AT PYRAMID LAKE AND STILLWATER WILDLIFE MANAGEMENT AREA

The Newlands Project was authorized by the Secretary of the Interior on March 14, 1903. Construction of the Project began shortly thereafter. The Project conserves and diverts water from the Truckee and Carson Rivers to irrigate land in western Nevada, east of the Sierra Nevada Mountains.

Water from the Carson River and diversions from the Truckee River are stored in Lahontan Reservoir. Releases from this reservoir are used downstream for farm irrigation, Carson Lake Pasture, Stillwater Wildlife Management Area and the Carson Sink.

The Derby Diversion Dam on the Truckee River diverts water into the Truckee Canal for conveyance to the Lahontan Reservoir. This canal serves two purposes: 1) provides water to over 5,000 acres of irrigated adjacent land; 2) carries water to the Lahontan Reservoir to supplement Carson River water in filling water needs in the Lahontan Valley.

There is not enough usable water from the Truckee and Carson Rivers to satisfy the demands of the Lake Tahoe area, all the irrigated areas along the Carson and Truckee Rivers, Pyramid Lake and the Wildlife Management Areas. This is on the basis of the present status of development, regardless of whether the water were more efficiently transported.

The problem is that there is not enough water in the two rivers to satisfy all uses. The Department of Interior has negotiated a package agreement with Truckee Carson Irrigation District whereby the District will decrease its ultimate water right acreage from 87,500 to 74,500 acres. The agreement also provides for a reduction in the District's historical water use from an annual receipt of about 496,500 acre feet to a maximum annual use of 406,000 acre feet. The reduction in water supply necessitates rehabilitation of Project features and the District's distribution system in order to serve the irrigated lands, the Carson Lake Pasture and Stillwater Wildlife Management Area with adequate water based upon the reduced annual supply.

This package agreement, however, will not be final until Congress acts favorably upon it and authorizes the Secretary of the Interior to execute the contract. Water saved under the package agreement will go to Pyramid Lake.

It is generally regarded that the Project could physically use irrigation water more efficiently. Historically, Project efficiency is 25%. Costs would be incurred through physical improvement of the distribution system and better water management. Plans have been developed for rehabilitation of the Lahontan Dam spillway as well as structures and segments of the Truckee Canal. Studies show that rehabilitation would cost several million

dollars. The cost would depend upon the degree of rehabilitation. Improvements still could not save enough water to stabilize Pyramid Lake at its present level. Survival of Pyramid Lake, at its present state, would require about 375,000 acre feet of water per year.

Operating criteria and procedures for the Truckee and Carson Rivers have been developed and made effective through publication in the Federal Register. The net results of the operating criteria is a limitation of diversions through the Truckee Canal. This is designed principally to eliminate large flows to the Carson Sink and save the equivalent amount in the Truckee River for increased flows to Pyramid Lake. The objective of the operating criteria and procedures is hindered due to the variable water supply and the inability to accurately forecast the runoff far enough in advance.

The principal forces attempting to get more water into Pyramid Lake are the Paiute Indians and their sympathizers who are trying to develop an economic base for the Indians. They want to make more money from recreation at Pyramid Lake. Development of facilities for boating, swimming, and water skiing is difficult because of the fluctuating water levels. The lake has dropped an average of one foot a year over the years. However, it may gain ten feet as it did in 1969 or lose three or four feet in any one year. It will continue to fluctuate above and below this downward trend curve until the surface acres are reduced to a point where average annual inflow matches annual loss. Then it will continue to fluctuate around this level.

Average annual inflow can be increased to "stabilize" the lake near its present level, but only at the expense of other water users including the waterfowl marshes in Lahontan Valley. The problem, of course, stems from an accute shortage of water. Concessions will be necessary, for there is simply not enough water to satisfy all the demands.

If Pyramid Lake cannot be held at its present level, the following are some alternatives.

1. To help solve the problem of "development" for recreation, the level at which the lake will stabilize can be calculated. By withholding inflow (diverting it away from the lake) this level can be reached much sooner.

2. Through various conservation practices and agreements between water users of California, Nevada, and the Department of the Interior, average annual inflow can be held as high as practical for as long as possible. Recreational "development" would be feasible, but more expensive and less convenient.

3. Water could be imported from northern sources as part of the proposed project to import water to the southwest.

4. Other possibilities such as evaporation suppression, desalting, pumping ground water for Lahontan Valley, purchasing water rights and diking the shallow north end of Pyramid Lake appear to be impractical at this time. However, these and many other solutions have been or will be studied by the Department of Interior technicians--hydrologists, biologists, economists, etc.

The main difference between solutions No. 1 and 2 as to the effect to the ecology of Pyramid Lake is time. We cannot definitely foresee how the fishery would be affected under any of these possibilities. A rise in total dissolved solids (or salinity) taking place over fifty years might affect aquatic ecology differently than the same TDS reached in only ten years.

Total dissolved solids in a closed basin lake increases slightly each year, even if volume is static. If the lake volume drops drastically due to evaporation, salt content will go up. To save the existing fish and other aquatic life of the lake, we must: 1) determine the salt tolerance of each animal; 2) find the volume that will keep the salinity safely above the tolerance; 3) determine if there is enough average annual inflow available now and in the future (say 100 years) to maintain this volume. If not, keep searching to find ways to provide this inflow. Maybe desalting will be practical in a few years to permit a lower water volume. 4) Identify other factors that may be limiting such as changes in temperature strata, shallow areas, and turbidity.

The Lahontan cutthroat trout has a very high salt tolerance. The upper limit is not known. It is thriving in Walker Lake with 8,400 ppm dissolved solids. Pyramid Lake now has about 5,400 ppm. The chemical composition of the dissolved solids is somewhat different in the two lakes. A tolerance for the cui-ui, a fish found only in Pyramid Lake, has not been determined. Of course, conditions affecting the food supply of these fish must also be kept in mind.

Anaho Island in Pyramid Lake is a National Wildlife Refuge, giving sanctuary to nesting colonies of white pelicans, cormorants, great blue herons and gulls. Access is restricted but increased human activity around the island and on resting and feeding sites could become a potential problem. Agreements with the Indians must be made to prohibit development and activity on critical areas of the lake.

We have hopes that access to Anaho Island from the mainland by humans and mammalian predators can be prevented, even if the level of Pyramid Lake falls as much as 90 to 100 feet. Artificial isolation from the mainland may be impractical after the lake level drops 100 to 120 feet.

Contrary to what you hear in the news, the demand to maintain the present level of Pyramid Lake is mostly for economic reasons. Biological problems will not become critical until the lake has considerably less volume than

it does today. Conversely, Stillwater Refuge and other marshes in Lahontan Valley have critical problems now. But, according to some news releases, Lahontan Valley interests are strictly economic. The amount of water needed to save these marshes is rather insignificant compared to needs in the long range economic, esthetic and ecological studies of Pyramid Lake.

The Stillwater Marsh is presently being operated with return flow from 406,000 acre feet allotted to Truckee-Carson Irrigation District. We are becoming more concerned that the marshes cannot be maintained without large cuts in acreage and changes in objectives. We will have to abandon some units to cut marsh acreage. In the spring of 1968 when it became obvious that water would be extremely short, 7,500 acres were taken out of the management program. This amount, plus an additional 3 or 4,000 acres, were not in production in 1969. Under the present water limitation, Stillwater has no history of several consecutive years without winter water. This fresh water seems necessary to reduce salinity in marsh impoundments. Under these conditions salt accumulation may force abandonment of some of our largest and most valuable units, i.e., Nutgrass Unit, Pintail Bay and Pelican Island.

Under the present water receipts, at best, productivity will be greatly reduced in most years and nil in other years. Some areas have already failed to some degree in both 1966 and 1968 due to a shortage of summer water.

Objectives for Stillwater Wildlife Management Area will have to be re-evaluated. Waterfowl production may be incidental to the production of food for migrant waterfowl. Under 406,000 acre feet conditions, nesting habitat for all species will be greatly reduced. The decision will have to be made to completely remove from operation habitat units which are not producing the maximum in food or nesting habitat.

The warm water fishery at Stillwater would have a lower priority than waterfowl management. The Lead Lake fishing would have to be incidental to water management. In other words, if water management for waterfowl demands a drawdown of Lead Lake that will harm the fish population or fisherman success--so be it. The same is true for Indian Lakes.

Since planned winter water releases have been eliminated, waterspreading in the brush to increase cattle forage and incidental waterfowl use is a thing of the past. Field irrigation of the pastures will be limited to a few hundred acres that would also provide goose browse.

Any cut in the 406,000 acre feet will compound the problem described. A major cut, say to 270,000 acre feet to the District, would cause a drastic reduction in waterfowl habitat in Lahontan Valley and eliminate Stillwater Wildlife Management Area as a manageable area. Only a guess can be made what the total loss of habitat in the Valley might be--maybe 80%.

Only additional winter releases of 10,000 to 15,000 acre feet of prime water might save the nesting habitat, muskrats, warm water fishery and units such as Nutgrass and Pintail Bay. The proposed Paiute Reservoir will also provide additional water storage on the west side. Improvements in canals, structures and dikes, and the elimination of at least parts of some units still will be necessary.

Since the Stillwater Wildlife Management Area is part of the National Wildlife Refuge System and is an important and irreplaceable link in the Pacific Flyway, the Department of the Interior is obligated to try to save this habitat according to International treaties.

Stillwater, plus the other Lahontan Valley marshes, account for a very large percentage of the total habitat east of the Sierra Nevada Mountains and between Oregon, Idaho, and Utah marshes and the California wintering areas. Diving duck habitat at Stillwater is especially important to this part of the Flyway. Statewide waterfowl inventories often show Stillwater and Carson Lake Pasture holding over 75% of the ducks in Nevada. It has not been unusual for Stillwater, alone, to have over 50% of the total state population of ducks. In November, about 25% of the Pacific Flyway canvasback population is present on Stillwater Marsh. During the winter, 90% of the whistling swans in Nevada may be on Stillwater.

Waterfowl production at Stillwater is important locally. The impressive pre-drought redhead production will never be duplicated without winter releases or some other means of getting water in the spring. Production of Canada geese in the valley is important to the local hunters.

The historical marshes in the Lahontan Valley are home to many species of shorebirds and waterbirds. The Carson Lake Pasture has one of the three largest white-faced ibis colonies in the western United States. More avocets and stilts are present in the Lahontan Valley during the summer than probably anywhere else in the western United States. The Stillwater Marshes are important feeding areas for the white pelican that nest on Anaho Island. The marsh ecosystem cannot be created in Pyramid Lake. If the marshes are lost in the Lahontan Valley due to lack of water, they will never be regained.

Public use increases dramatically each year in the Lahontan Valley. There will be a large increased need for recreation in the future; that is, hunting, wildlife photography and nature study. These forms of recreation are not available at Pyramid Lake and they are desired by the public.

Stillwater Wildlife Management Area is irreplaceable. In a report to the Operating Criteria Committee in 1968 the following statement in support of the request for water releases during the winter was made: "To date approximately $2,000,000 have been expended by the Bureau of Sport Fisheries and Wildlife and Nevada Fish and Game on Stillwater Wildlife

Management Area. Replacement cost, should the Area be lost to the refuge system, is estimated to be between 12 and 15 million dollars." However, it has been determined that no suitable replacement lands are available in the state of Nevada or in this part of the Pacific Flyway!

We have long been told that Stillwater could survive on return flows from 406,000 acre feet to Truckee-Carson Irrigation District through a proper split of drain and return flow between Carson Lake Pasture and Stillwater Marsh, and through modification of our transportation system and management. Now we are saying that it cannot--at least not as an area capable of supporting significant waterfowl habitat, a warm water fishery, and a growing need for public waterfowl hunting. When this theory was developed by Bureau of Sport Fisheries and Wildlife and Bureau of Reclamation engineers for the Task Force in 1964, the importance of winter water was not fully recognized. Maintenance water, i.e., sufficient to offset average annual consumption, does nothing for the tremendous salt problem. Terminal units must be dumped once or twice each year or they become dead, stagnant, sumps. This has already happened to Big Water and much of the Pelican Island area. The large important Nutgrass Unit is now in jeopardy. Pintail Bay and Goose Lake would go next. The loss of these units would cut the waterfowl carrying capacity by at least one-third and possibly more.

The Bureau of Sport Fisheries and Wildlife is very much concerned with the survival of fish and wildlife at Pyramid Lake. We are just as concerned and responsible for survival of the waterfowl marshes in Lahontan Valley. Both are dependent upon management of the Carson and Truckee Rivers.

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